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ABSTRACT

These three papers are from a symposium on new perspectives in human resource development (HRD). "Developing an Instrument to Measure the Use of Play-Based Training Methods in Healthcare Education" (Rebecca J. Adams, Karen E. Watkins, Tom Valentine) reports preliminary findings from a pilot study that tested data collection procedures and the instrument's adequacy. It describes use of a survey of healthcare educators to establish reliability and validity and the development of emerging norms for each scale. "HRD and Economic Development: A Mega Level Research Agenda" (Suhail S. Zidan) presents an initial conceptual framework for a research agenda at the mega (societal) level with particular emphasis on the role of the state and the multinational enterprise in the national economic development process in developing countries. "Improving Technical Training: The Effectiveness of Technical Subject Matter Experts as Trainers" (Saundra Wall Williams) reports on a study to determine if subject matter experts (SMEs) who deliver technical training perceive that they possess the required level of proficiency for the instructor/facilitator competencies. It finds three variables that are germane to trainer effectiveness---experience, formal education, and professional preparation--and that not all of the indicated variables do not have a perceived impact on trainer effectiveness. (YLB)

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ED 431 951

19 **New Perspectives in Human Resource Development**

Chair: Jean McFarland, G.P. Morgan and Associates, Inc.

19-1 Developing an Instrument to Measure the Use of Play-Based Training Methods in Healthcare Education

Rebecca J. Adams, University of Georgia

Karen E. Watkins, University of Georgia

Tom Valentine, University of Georgia

19-2 An Approach to HRD Based on Acceptance of Responsibility, Dedication to Truth, Delaying Gratification, and Love: A Case for Kenyan Students

Tabitha Sewe, Moi University, Kenya

19-3 HRD and Economic Development: A Mega Level Research Agenda

Suhail S. Zidan, Ohio State University

19-4 Improving Technical Training: The Effectiveness of Technical Subject Matter Experts as Trainers

Saundra Wall Williams, North Carolina State University

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Developing an Instrument to Measure the Use of Play-Based Training Methods in Healthcare Education

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Karen E. Watkins
Tom Valentine
University of Georgia

This paper reports preliminary findings from an ongoing instrument development and validation study of the use of play-based training methods. The research project involved the use of the survey with healthcare educators to establish reliability and validity and the development of emerging norms for each scale.

Keywords: Play Theory, Flow Theory, Training Methods

The healthcare industry requires an overwhelming amount of mandatory training and this list continually grows longer. Many workers are experiencing what Rowell and Spielvogle (1996) call "educational overload." Enthusiasm for learning new skills or updating old ones has decreased and people are basically tired of boring presentation methods. However, information and technology change quickly and competency must be maintained.(Resko and Chorba, 1992). Classic classroom teaching methods have been used in the past to meet this objective, but frequently make the learning process tedious, monotonous, and boring.

Healthcare educators are similar to educators in other industries -- they have often used lecture based instructional methods. Since its inception from the Germanic tradition in the mid-19th century, lecture has been the principle means of transmitting knowledge from scholar to student (Waggoner, 1984). This method has been dubbed the "chalk and talk" approach by Bassi, Cheney, and Van Buren (1997). Despite changes in technologies and recent advances, educators still cling to the perpetuation of the lecture technique (McAlpine, 1996; Bassi, et al., 1997). However, as healthcare educators and other professionals find themselves faced with changing demographics in the classroom (younger and older participants) and increasing responsibilities for assuring competency (JCAHO, 1997), they must seek alternatives to the traditional lecture method if they are to both hold learner's interest and also motivate learning.

The use of play-based instructional methods, such as games or toys or characters, is an emerging interest among participants and trainers alike. However, it appears that their use among educators is limited. Training's 1997 Industry Report indicates that 94 percent of respondents are using traditional classroom programs with a live presenter.

In meeting the changing educational needs of healthcare workers, educators must be motivated to seek more creative ways to teach participants. In describing creative people, Csikszentmihalyi (1996) points out that creative people differ in many ways but they are unanimous in one respect: "They all love what they do" (p.107). It is not money or fame that drives the creative person; it is doing the work they enjoy. He goes on to describe creative individuals as most enjoying activities that allow them to design or discover something new.

Robinson and Stern (1997) state that corporate creativity is often limited by organizations that do not recognize the preconceptions "about who will be creative, what they will do, and when and how they will do it" (p.20). Many healthcare educators often do not use play-based training methods because of underlying organizational and personal constraints. These constraints may cause educators to miss the opportunity to be creative. Thus, they miss giving participants exciting and challenging learning experiences.

Designing and delivering training that will invoke a flow experience, as described and defined by Csikszentmihalyi (1990), requires creativity by the educator. By stifling creativity healthcare organizations may actually be preventing educators from reaching a state of flow. The flow experience is described as having nine main elements: 1) there are clear goals every step of the way; 2) there is immediate feedback to one's action; 3) there is balance between challenges and skills; 4) action and awareness are merged; 5) distractions are excluded from consciousness; 6) there is no worry of failure; 7) self-consciousness disappears; 8) the sense of time becomes distorted; and 9) the activity becomes autotelic (Csikszentmihalyi and Rathunde, 1993). A state of flow in educators may lead to the use of more involving and creative teaching techniques and thereby enhance learning.

The theoretical framework for this study is a result of a thorough review of the literature related to adult education, training and development, healthcare education, business education, flow theory, and play theory. The review of the literature revealed numerous positive reasons, benefits, for educators to use play-based instructional

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methods in their classroom presentations. It is agreed among trainers that adding fun and humor to presentations helps to promote motivation, cooperation, interaction, competition, involvement and communication (Ramanos, 1978). Using play in training has also been documented to reduce stress and tension, foster learning and creativity, encourage success, and enhance communication among co-workers (Halmo, 1985; Williamson, 1993).

However, educators do not use play-based instructional methods because they are sometimes limited by organizational and individual constraints. We are socialized to believe that play for adults is inappropriate (Rieber, 1996). The attitudes in the organization often reflect that adults should not play because play is for children and work is for adults (Bowen, 1987; Csikszentmihalyi, 1975; Rieber, 1996). In addition to negative beliefs about adult play many educators believe they do not have the resources, such as computer skills, graphic skills, time, or money, to develop and use play-based instructional methods (Coppard, 1976; Jacobs and Baum, 1987).

Identifying perceived benefits and constraints will be helpful to promote the use of play-based instructional methods. Including experience of flow adds another dimension that explores the educator's satisfaction and intrinsic motivation to use play-based training methods. The literature on flow theory suggests that individuals engaged in challenging and intrinsically motivated activities are more likely to enjoy and gain greater rewards from their work.

Research has shown that those who engage in activities that result in flow experiences tend to be more creative (Csikszentmihalyi, 1996). Creative individuals have been described as being playful people who are often uninhibited in their thinking and behavior (Lyman, 1989; Slesinski, 1991). This playful attitude often stimulates the creative ideas that improve performance, productivity, and profits in organizations (Berg, 1995). Educators in the classroom are also striving to improve performance, productivity, and profits but they must do it directly by their own work and indirectly by the work of those they teach and train. The effectiveness of training is vital to increasing performance, productivity, and profits. It is not suggested that training be "trivialized" with play but it should be recognized that play is an essential part of our continued intellectual and emotional growth that can be stimulated in the classroom (Jacobs and Baum, 1987).

Drawing from the literature review, an exploratory model of the use of play-based training methods is proposed. This model includes two use factors (constraints and benefits) and one factor for flow experience. Several personal and organizational background variables are also included.

Research Questions

1. What play-based instructional methods are healthcare educators most frequently using?
2. What are the most frequently cited constraints that prohibit healthcare educators from using play-based instructional methods?
3. What are the most frequently cited benefits that encourage healthcare educators to use play-based instructional methods?
4. To what extent do constraints to using play-based training methods, benefits to using play-based training methods, flow experience, and selected background variables separately explain the observed variance in healthcare educators' use of play-based training methods?
5. To what extent do constraints to using play-based training methods, benefits to using play-based training methods, flow experience, and selected background variables jointly explain the observed variance in healthcare educators' use of play-based training methods?

Methodology

Because there is little empirical research on the use of play-based training methods, no suitable existing instrument was found to use in this study.- The items to measure the variables "use of play-based training methods", "perceived constraints to the use of play-based training methods", and "perceived benefits to the use of play-based training methods" were developed by reviewing the literature, holding a group interview with healthcare educators, and conducting individual interviews with healthcare educators to a point of saturation. The dependent variable, "use of play-based training methods", in this study was defined as any playful, fun, or experiential instructional strategy that contributes to the development of learners through active involvement and enhanced motivation. The variable, "perceived constraints to using play-based training methods", was defined as barriers from within the organizational culture and/or personal beliefs of educators that do not support the use of play-based training methods (reasons why educators do not use play-based training methods). The "perceived benefits to using play-based training methods" variable was defined as benefits and motivations that encourage the use of play-based training methods (reasons why educators use play-based training methods).

The variable "flow experience" was measured using a variation of the Flow Scales, based on Csikszentmihalyi's research. These scales derived from the flow model ask participants to rate their last training session along 12 dimensions related to the flow experience. The ratings were made on a 6-point Likert scale. In theory, the person who is in the state of flow will describe the experience of designing and delivering training in terms of being very involved, having clear feedback, wanting to do the activity, not being bored, not making an effort to concentrate, and so on.

The pilot study was conducted by administering the survey instrument to the Georgia Society for Healthcare Education and Training (GSHET) members who are not members of the national organization, Health Care Education Association. According to a 1994 survey of national healthcare educators (Stein & Glazer, 1994) the healthcare educator tends to be "female, middle-aged, working in an acute care, urban setting, residing in a department of hospital wide education and training, and reporting to a vice president level" (p. 7). The 1994 survey indicates that most educators work in departments labeled hospital wide education and training and report either to a nursing or human resources administrative function. Titles include director of education, director of hospital education, director of nursing education, staff development coordinator, instructional specialist, nursing educator, hospital educator.

Results, Conclusions, and Limitations

The pilot study was used to fulfill 2 broad goals: 1) test data collection procedures and 2) test the instrument adequacy.

The mailed survey was sent to 120 GSHET members. Fifty surveys were received and 2 were returned from the post office for a 40% response rate with only one mailing. Only one survey was unusable. This individual left most of the survey blank and indicated that he/she was not yet doing this type of training. Overall, we were pleased with the collection process and believe it is working adequately. Our target return rate for the pilot study was 30 to 35 percent with only one mailing.

In terms of instrument adequacy, we conducted 3 separate sets of tests. First we examined the item frequency on all items. We did this to ascertain if the items were exhibiting sufficient variance. In our judgment, no item exhibited inadequate variance. In most cases all points on the scale were used. In a few cases this was not true but in no case did more than 80% of the variance fall on any 2 values. We considered it sufficient variance to discriminate across the sample. Second, we examined for possible redundancy within 3 of the 4 constructs that were relevant. We did correlation among all the items and examined the intercorrelations. We identified all pairs that had correlation in excess of .75 and then examined them for possible redundancy. In only one case on the construct constraints did we find redundancy. As a consequence we wrote one item to replace 2 items in the constraints variable. Thirdly, we ran coefficient alpha reliabilities on the 3 scales. All cases are considered adequate. Although, the constraints alpha may reduce slightly after removing the redundant item. Table 1 below reports the alpha coefficients for each scale.

Table 1. Scale Reliability Scores

Variable Name	Alpha
Flow Experience	.89
Constraints	.86
Benefits	.95

All alpha scores were acceptable, ranging from .86 to .95.

The pilot study revealed interesting information about the respondents and their organizations. The mean age for respondents was 46.6 and the median was 47. The mean years worked in healthcare was 23 and the median was 23.5. The mean years worked in healthcare education was 10.2 and the median was 10. The mean number of employees was 1455 and the median was 1000. Twenty-two percent of the respondents reported to nursing, 50% reported to human resources, and 28% indicated they reported to other areas. Fifty-two percent reported a bachelor's degree as their highest degree, 33% reported having a master's degree, 7% reported having a doctorate, and 7% reported having an associate degree. Respondents reported 61% having a degree in nursing, 15% having a degree in education, 2% having a degree in business, 9% having a degree in healthcare administration, and 11% other degrees.

According to survey responses many healthcare educators are using play-based training methods. The methods reported most often were icebreakers to introduce participants (43.5%), icebreakers to introduce content (45.7%), and joke or humorous stories (54.3%). No respondents indicated using magic tricks.

A more in-depth look at high and low scoring items helps to clarify how educators see the constraints and benefits to using play-based training methods and how they reported flow experience. Table 2 below presents these data

Table 2. High and Low Scoring Items by Variable

Variable	Mean	Highest Item	Lowest Item
Flow	4.60	"I clearly knew what I was supposed to do." [5.23]	"I was anxious." [3.74]
Constraints	2.84	"some healthcare topics are not suitable for play-based training methods." [4.46]	"play-based training methods are for children but not adults." and "play-based training methods are inappropriate for adult learners." [1.59]
Benefits	4.91	"play-based training methods actively involved learners." [5.30]	"play-based training methods enhance relationships outside the classroom." [4.49]

One limitation to this research is that it is being conducted with a very specific audience, healthcare educators in one state. Thus, the results cannot be generalized to all training and development professionals nor to all healthcare educators. Further studies should look at a more national sample of healthcare educators as well as other training populations. For example, do internal HRD professionals report more use of play-based training methods than do external trainers?

How This Research Contributes to New Knowledge in HRD

Numerous authors have published manuals and articles on how to create and use fun methods of training (Cohen and Jurkovis, 1997; Hemsath and Yerkes, 1997; Leeds, 1995; Newstrom and Scannell, 1980; Sugar, 1991; Steinwachs and Sugar, 1984; Walter, 1995) and some instruction has been given on how to incorporate these into healthcare settings (Deck, 1995; Fuszard, 1989). However, little empirical research has focused on educator's use of play-based teaching methods and the nature of play that is used in training and development.

A link between motivation and the need to play in the workplace is not well studied. So this study fills a gap in the literature by clarifying what healthcare educators do and what experiences lead them to experience a state of flow. Knowledge about playful activities and flow experience will help individuals identify which practices promote a state of flow and better utilize play in their training in order to enhance their own flow experience.

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HRD and Economic Development: A Mega Level Research Agenda

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Much of the HRD research is conducted at the micro (individual) or macro (organization) levels. It is seldomly conducted at the mega (societal) level. This paper presents an initial conceptual framework for a research agenda at the mega level with particular emphasis on the role of the state and the multinational enterprise in the national economic development process in developing countries.

Keywords: Economic Development, Human Capital, Multinational Enterprise

Scholars & researchers have attempted to categorize the various levels or targets of human resource development intervention and impact (Gilbert, 1978; Rummler & Brache, 1995; Kaufman & Watters, 1992). I found the use of the following three levels to be very helpful in conceptualizing the impact of HRD intervention. These are: the individual, the organization, and the society at large (see Figure 1). While most HRD literature focuses on the first two levels, it is the third level that is at the heart of this paper. What is the impact of HRD on the whole society? Does HRD intervention have a role at the mega level? Or, is this beyond the scope of HRD as an applied field of study?

Because of the enormity of this topic, I chose to limit my initial exploration to the context of developing countries (a.k.a., less developed countries, or LDCs) as they struggle for economic development and prosperity. Further, I chose to focus this exploration on only two aspects of the economic development effort. The economic literature indicates that there are six causes of economic development. These are: foreign trade, technological transfer, resource allocation, structural transformation, human capital formation, and savings and investment (Hagen, 1986; Loehr & Powelson, 1981). In this paper, the focus will be on examining the role of HRD in the relationship between the last two causes of economic development—that is, human capital and investment. This paper presents the theoretical foundations for exploring the HRD role in social and economic development as they are linked to individual expertise and organizational performance improvement efforts.

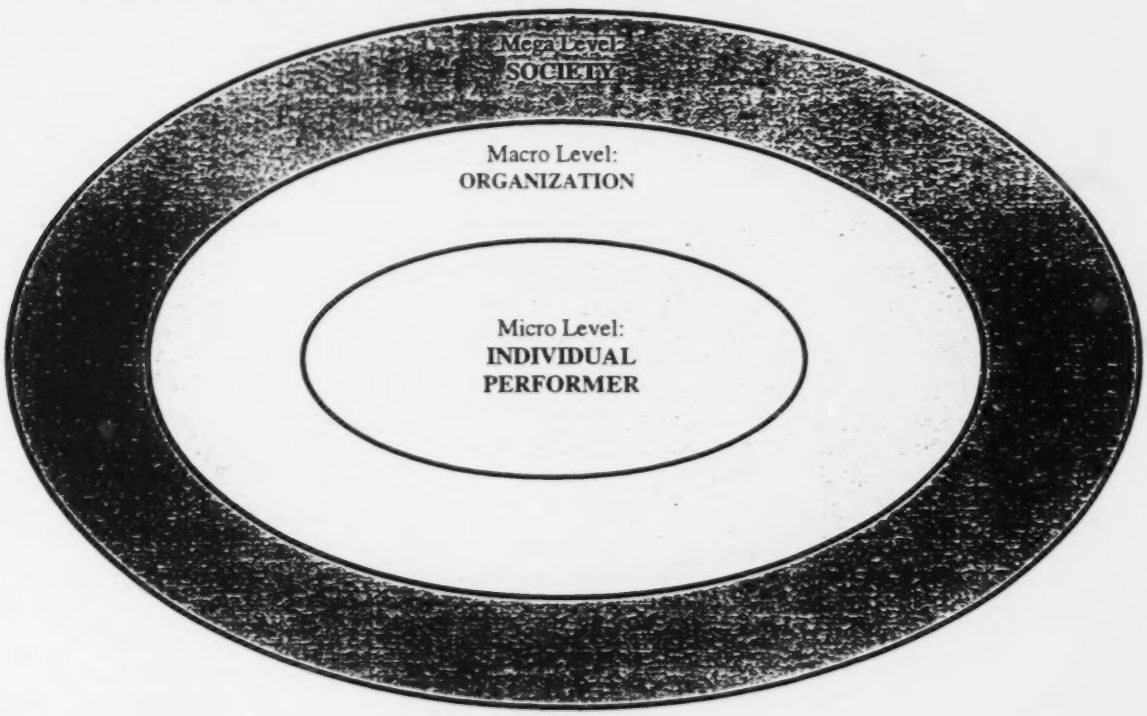

Figure 1: Levels of HRD intervention and impact.

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Statement of the Problem and Research Questions

The literature suggests that the successful and dominant companies of the future will be those who are able to capitalize on the knowledge and skills of the global workforce (Ashton and Green, 1996; Thurow, 1996). Thus, multinational enterprises (MNEs) will be competing among themselves [and between them and the domestic companies of a given country] for the recruitment and retention of highly skilled employees. However, will the MNEs be competing for this global workforce in the developing countries? Perhaps!

The international business literature shows that the majority of the MNEs operating in the world originate in the developed nations (Dunning, 1993). While some developing nations are more successful than others in bringing foreign investment into the country, the bulk of MNE investment remains in the developed world. Therefore, additional knowledge is needed in order to inform the LDCs—who are interested in MNE investment—in creating and implementing a strategy conducive to economic development through the appropriate approach toward educating and skilling their own workforce. This research agenda attempts to identify MNE attitudes toward LDCs, desired workforce characteristics, and emphasis placed on these characteristics in the process of selecting a particular country for possible investment in a new business venture. LDCs interested in attracting MNEs into their economies have to ensure that they have a workforce that is skilled and ready to meet the job performance requirements of these companies. So, what kinds of programs are developed and implemented by LDCs for the purpose of skilling the workforce to meet the domestic and international employment challenges of the 21st century?

The following are preliminary research questions:

1. What are the attitudes of MNEs toward the workforce in developing countries?
2. What are the characteristics of the labor force in LDCs that MNEs are looking for in the next century?
3. How much emphasis is placed on workforce characteristics within the MNE system when deciding on new investment ventures in a developing country?
4. Are LDCs planning and implementing *high skill formation* programs for the development of their workforce?
5. What are the characteristics of LDCs that choose the *high skill formation* as opposed to those who choose the *low skill formation* approach?
6. How are LDCs addressing the concerns of the non-traditional labor-force [women, older workers, people with disabilities, etc.]?

The following is a delineation of the conceptual framework and the theoretical underpinnings of the proposed research agenda.

Human Capital and HRD

The economic development literature identifies human capital formation as one of the critical causes of development. Human capital is defined as the productive investments in humans which include their skills and health that are the outcomes of education, healthcare, and on-the-job training (Todaro, 1994). The relationship between human capital theory and human resource development stems from their focus on the utilization of the labor force in the process of economic productivity in the broader sense of the term. Human capital theory is an economic theory that addresses the macroeconomics of production and economic development. It views humans—their knowledge, skills, health, and effort—as an integral part of the capital of a country which includes financial and natural resources. The basic premise of this theory is that investments made at the front end in educating and skilling the labor force (among other services such as nourishment and health) would pay dividends for a country in its effort toward economic development and viability and contribute to an increase in output per each unit of input (Hogendorn, 1996). The human capitalist approach studies the cost-benefit of such investment in terms of its efficiency in reaching equilibrium in the amount of investment in education as opposed to investment in other factors of production for the purpose of maximizing the magnitude of return-on-investment.

Similarly, HRD views humans as resources to be trained, educated and developed within the system of an organization for the purpose of enhancing the productivity of the organization through the expertise of its workforce. Jacobs (1990), Swanson (1995), and others have characterized HRD as a multidisciplinary field of study. They identified economics as an important discipline that contributes to the theoretical basis of HRD (see Figure 2). Economics in general and human capital theory in particular becomes important foundational ingredients for HRD theory and practice. In his first editorial for the commencement of the *Human Resource Development Quarterly*

journal (HRDQ), Swanson (1990) divided the contents of HRD into two camps: human development (psychology and education), and human capital (economics and management). This perspective also led to the financial forecasting and return-on-investment studies in HRD.

Carnevalle, Gainer and Villet (1990), taking a human capital approach, place HRD at the strategic level within the organization. They view employees as a resource that must be trained in order to maintain the competitive advantage of the corporation and increase its value. In this perspective, HRD activities, and specifically training becomes utilitarian in the organizational strategy to keep up with economic and technological changes. Therefore, linking training with specific job functions becomes the strategy for maximizing the return on investment. It is the economic potential and the economic rationale that provides the impetus for training in the workplace. Training is an integral part of the economic system whether we speak of organizational macro system or a national mega system. Here comes the confluence of the corporate strategy and the government economic development plan where the decisions for investments in the training and development effort and the educational system are based on considerations of the efficiency and cost-effectiveness of the proposition (see Figure 3). Hence, governments, in addition to their public educational systems, may provide corporations and other private institutions with investment and tax incentives for training and developing their workforces.

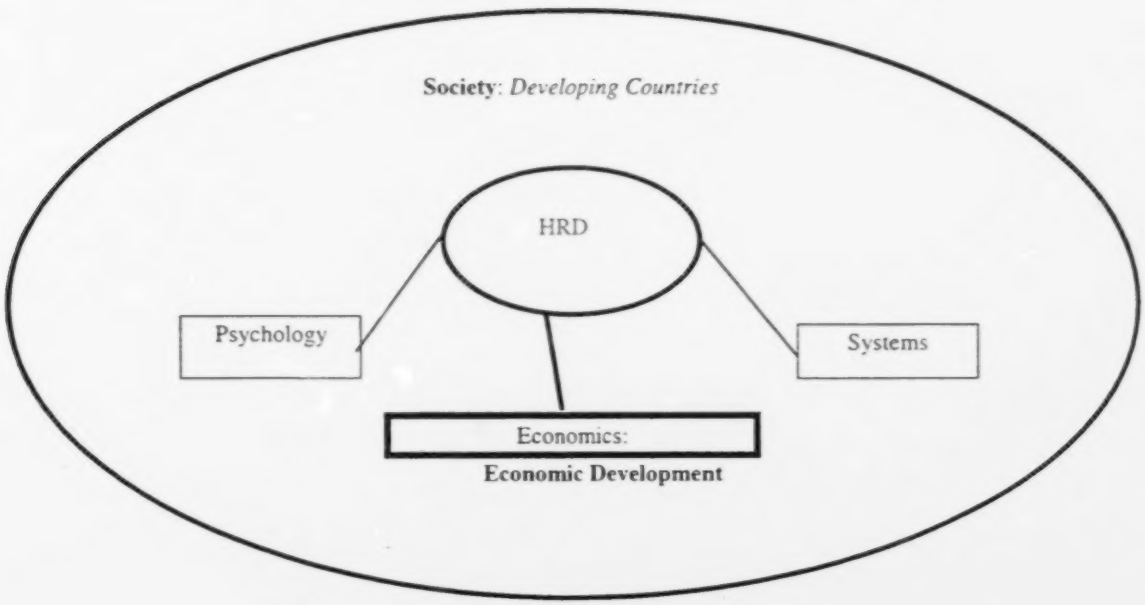

Figure 2: The role of economics in HRD Intervention.
Adapted from Swanson, 1995.

Multinational Enterprises and Developing Countries

Throughout history, capitalism has made its advances in human productivity on the basis of the exploitation of human labor, technological innovation, and the appropriation of vast material wealth; rarely through the education and training of the large majority of the workforce (Ashton & Green, 1996). However, as the twentieth century draws to a close, there seems to be "a consensus that the salience of a nation's education and training system is becoming the key item in the struggle for competitive [economic] superiority (Ashton & Green, 1996; p. 1). All the countries around the world, both developed and developing countries, seem to realize that the road to economic growth and development is tied to the skill formation of their human capital in order to improve the productivity of the labor force and thus raising the living standards of the population. Further, Thurow (1996) posits that countries who wish to develop and succeed in the future must begin to make long-term plans and commit major resources as investments in the education and the high skill formation of their society.

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Marshal and Tucker (1992) assert that "The future now belongs to societies that organize themselves for learning. What we know and can do holds the key to economic progress just as command of natural resources once did ... The prize will go to those countries that are organized as national learning systems, and where all institutions are organized to learn and to act on what they learn" (p. xiii). According to Thurow (1996), in the past two centuries, the economic theory of comparative advantage directed companies to locate new business ventures in the world where natural resources and labor forces were abundant. Today, however, and for the next century, the comparative advantage rests with the knowledge and skills of the workforce. In fact, Thurow (1996) asserts that the successful companies in the next century will be those who can create, organize, and capitalize on the brainpower of the global workforce. Multinational enterprises play a major role in the global human resource development area both directly and indirectly (Dunning, 1993). Dunning (1993) suggests that multinational enterprises (MNEs) play an indirect role in the development of the workforce in that the countries will attempt to develop their domestic human resources to meet the potential needs of MNEs who may be prospecting for a new foreign direct investment (FDI) location. Also, MNEs, once established in a new country, become involved directly in further developing the skills of the foreign workforce they hire. However, Dunning (1993) concludes that the effects of the MNE activity on the eventual skill mix and quality of the workforce in a particular country are not clear.

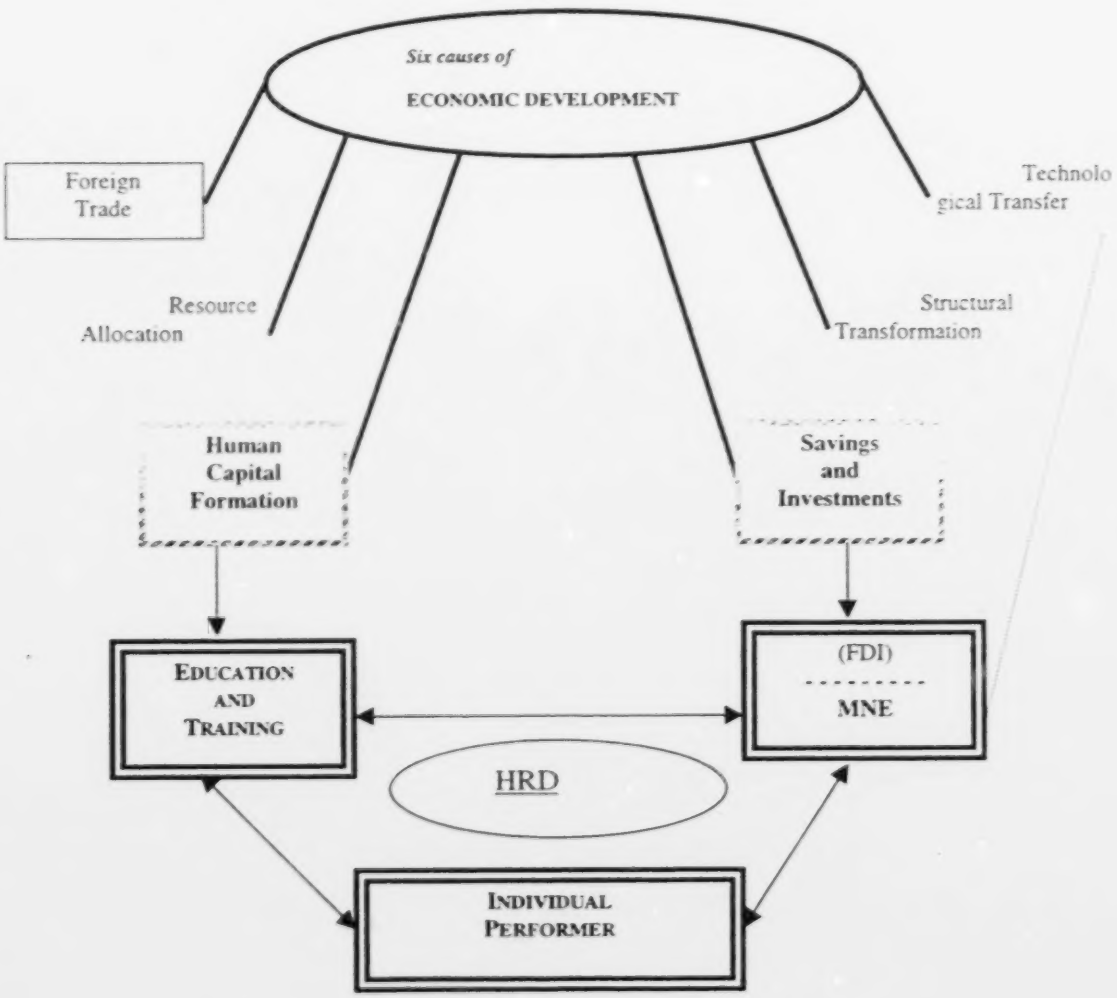

Figure 3: The role of HRD in economic development at the confluence of societal, organizational and individual levels.

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Generally speaking, the literature suggests that, in its strategy for economic development, any developing country will need to develop, educate and train its human resources. A segment of these human resources will be prepared to meet the needs of prospective MNE investments. Also, MNEs will be searching the global market for new locations as prospects for their investment in production and service ventures. MNE decisions concerning their new venture locations will be affected in part by the availability of skilled human resources that will meet their needs (Bailey, Parisotto, & Renshaw, 1993). However, these LDCs can only guess what are the skill formation needs of the potential MNE ventures that may be seeking to start operation within their borders. Therefore, to be more effective in their educational and training programs, and to enhance their potential return on their investment in their human capital, LDCs [those who are interested in attracting MNE investments] need to have better information about the criteria that MNEs use in determining the readiness of the labor force in a particular country in terms of their skill formation.

Conclusion

I see this research as foundational in nature for the HRD field. In my view, human capital theory at the mega (societal) level complements HRD at the macro (organizational) level. In my attempt to develop a research agenda concerning the economic development prospects of LDCs, I believe that LDC governments must take a proactive approach toward creating an educational system that prepares the labor force for the global economy of the 21st century. This labor force then, in the systems view of the organization articulated by Rummler and Brache (1995), becomes one of the critical inputs for any organization (read economic entity) functioning within the boundaries of the respective LDC. At that point, HRD practitioners, in their focus on training and development, organization development, and career development, take the responsibility for enhancing the performance of the organization through the assessment of needs and the identification of gaps in performance at the organizational, workflow, and individual levels.

While I strongly believe in the viability of aforementioned perspectives, my philosophical views, influenced in part by my personal values and professional experience, compel me to keep in mind that the labor force we are discussing here is not merely an abstract concept or simply a form of capital or resource to be utilized for the planned and targeted ends of countries and organizations. This labor force is comprised of individual human beings who have their own goals, desires and aspirations. Therefore, because the human capital is different than physical or financial capital, and unique in that it has a will of its own, I believe that it becomes more difficult to determine the causal relationship between the actions of the HRD practitioners and the effects on the organizational outcomes, not to mention the ethical ramifications with regard to the individual employee.

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Improving Technical Training: The Effectiveness of Technical Subject Matter Experts as Trainers

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Technical subject matter experts (SMEs) are considered experts in technical subject matter; however, they may not possess the required level of proficiency for certain competencies to deliver effective training. This study investigated the issue surrounding the effectiveness of technical SMEs in the delivery of training. Three variables, experience, formal education, and professional preparation, were found as germane to trainer effectiveness. The findings suggest that all the indicated variables do not have a perceived impact on trainer effectiveness.

Keywords: Subject Matter Experts, Technical Trainers, Trainer Effectiveness

Technical training has emerged as an essential component within the organizational training structure and within educational practice. Technical training is defined as the most common type of skill improvement instruction, which is designed to increase the technological capabilities of workers (Sugar & Schwen, 1995). Research shows that an average of 91 percent of all training delivered in the workplace involves technical training (Lakewood Publications, 1997).

Due to the vast amount of technical training being delivered in the workplace, there is an obvious need for effective technical trainers. Unlike many of the generalist trainers working within human resource departments, technical trainers are often technical specialists who, the majority of the time, have been recruited from the technical ranks of the company. Rather than hiring individuals with a training background, organizations tend to recruit their resident technical experts and turn them into trainers (Kelly, 1995). Notwithstanding, as employers and employees face the challenge of new technologies in high performance work organizations, the need for cutting edge technical training is clear (Kelly, 1995, Segall, 1995).

Problem Statement

Utilizing subject matter experts (SMEs) as trainers has become a common practice in technology industries. Although these SMEs are knowledgeable in the technical subject matter content, it is likely that some do not possess the appropriate level of proficiency for required instructor competencies to deliver effective technical training to adult learners.

A major study in training and development (McLagan, 1989) identified the role of the instructor/facilitator and the required competencies for this role. The instructor/facilitator role consists of "presenting information, directing structured learning experiences, and managing group discussion and group process" (McLagan, 1989, p. 55). The competencies associated with the role are defined as "an area of knowledge or skill that is critical for producing key outputs" (p. 77). Specifically, the study identified that the instructor/facilitator should be able to exhibit an advanced level of expertise in adult learning methods and training and development theories and techniques methods in order to be effective. Hence, possessing the required level of proficiency for these competencies is a means to determine the effectiveness of technical trainers.

The possible lack of knowledge in adult education principles and training and development methods and techniques for SMEs in technical training can present problems for organizations. First, ineffective training delivery wastes dollars invested in instructors, training materials, and employee time. The costs of employees who have not been given the skills they need to utilize the technologies required by their jobs wastes additional dollars. Technical trainers who are not given adequate support in the delivery of technical training may cause employees to feel demoralized because they cannot apply the skills on the job (Clark, 1994). If technical trainers do not possess the competencies required to deliver effective technical training, then the result of the training could lead to negative consequences for the learner as well as the organization.

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The adult education literature validates the idea that the principles of effective practice and their implementation should characterize an adult educator (Galbraith, 1991; Knowles, 1984; Knowles & Hartl, 1995; Brookfield, 1986). Although the competencies have been clearly defined in the research literature (McLagan, 1989), many technical SMEs who deliver training are not required as part of their job description to possess these competencies. Some may actually perform the identified work of a technical trainer; however, they may not possess the required level of proficiency necessary to produce the work effectively. Hence, in order to improve the delivery of technical training, SMEs should be proficient in both technical subject matter expertise and the instructor/facilitator competencies. Thus, it was hypothesized that SME effectiveness will be positively related to the proficiency level of the identified instructor/facilitator competencies.

The purpose of this study was to determine if SMEs who deliver technical training perceive that they possess the required level of proficiency for the instructor/facilitator competencies. The framework for this study was the findings of McLagan (1989), a perception study which focused on competencies and role outputs. The study determined role competencies – the knowledge, skills, and abilities – individuals must possess to produce HRD work outputs (McLagan & Suhadolnik, 1989). Similar to the research design of the McLagan (1989) study, this current study measured instructor effectiveness by utilizing survey research of competency self-perception.

The Search for the Criteria of Trainer Effectiveness

An important part of this study was the identification of the criteria associated with trainer effectiveness. The literature indicates that a trainer plays different roles and that these roles must be clearly identified in order to conprehend effectiveness. Two studies were identified that focused on the characteristics of effectiveness based on the specific roles of a trainer: McLagan & Suhadolnik (1989) and IBSTPI (1988). The research findings given in *Instructor Competencies: The Standards* (IBSTPI, 1988) provided a set of core competencies that an instructor should demonstrate to successfully complete an instructional assignment. Likewise, the research findings presented in *The Research Report* (McLagan & Suhadolnik, 1989) define the competencies one must possess in order to be considered effective in the role. Therefore, this research clearly gives a framework of assessing the different roles of a trainer by utilizing the competencies for each role.

In the formation of a conceptual framework, the concept of SME in the role of technical instructor/facilitator effectiveness was designated as the dependent variable. As factors that might be significantly related to the development of a SME in the role of technical instructor/facilitator, the independent variables of (1) formal education, (2), adult education or training and development professional preparation and (3) experience were identified to be most germane to this study. In order to determine whether or not a subject matter expert can be effective in the role of technical instructor/facilitator, a conceptual model was developed that consists of the work outputs (products and services) and the competencies of the subject matter expert in the instructor/facilitator role (Figure 1).

The literature search identified several criteria for effective trainers. However, no study indicated a direct relationship between trainer effectiveness and experience, academic degree or certification, or instructor preparation. While there are no studies that indicate a relationship between the effectiveness of a SME in technical training delivery and the indicated variables, the literature suggests that both professional development in adult education or training and development would assist technical SMEs in becoming effective instructors (Chance, 1995; Castner & Jordan, 1989; Kaeter, 1995; Marsh, 1995; Trautman & Klein, 1993). Although these variables may contribute to the effectiveness of an instructor, the literature did not advocate them as requirements. When the scope of the literature review was narrowed to SMEs as technical trainers and technical training delivery, the review of the literature identified no studies and a paucity of articles on the subject. This information provided the rationale for identifying formal education in adult education or training and development, and instructor professional preparation (train-the-trainer workshops or adult education and training and development courses), as independent variables in this study.

In consideration of the possible relationship between the effectiveness of SMEs in the delivery of technical training and the amount of experience in the instructor role, little research could be found to support or deny this relationship. One study (Falkman, 1990), identified a possible relationship in these variables. This study determined that more experienced trainers were better able to deal with adults as learners than those with less experience. The results of the Falkman (1990) study seemed to give evidence in the literature to support instructor experience in the instructor role as a variable for study.

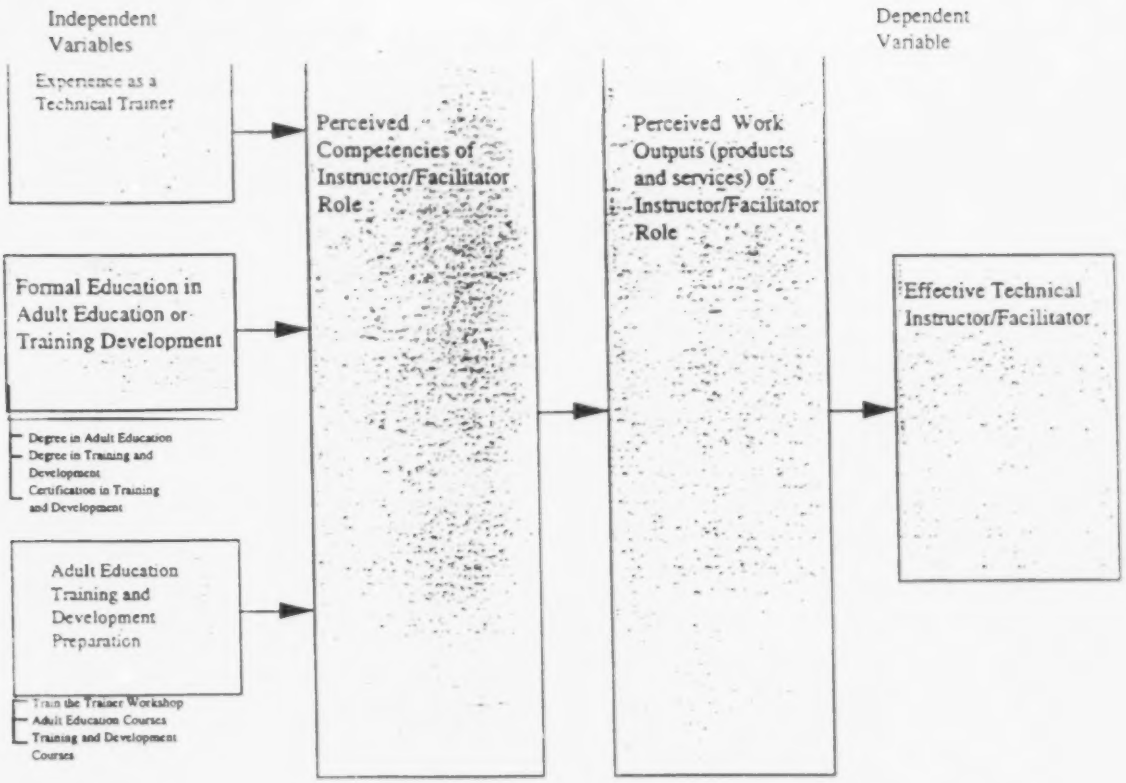
Independent Variables
Dependent Variable
Experience as a Technical Trainer
Formal Education in Adult Education or Training Development
Degree in Adult Education
Degree in Training and Development
Certification in Training and Development
Adult Education Training and Development Preparation
Train the Trainer Workshop
Adult Education Courses
Training and Development Courses
Perceived Competencies of Instructor/Facilitator Role
Perceived Work Outputs (products and services) of Instructor/Facilitator Role
Effective Technical Instructor/Facilitator

Figure 1. A conceptualization of variables and relationships depicting the effectiveness of Technical Subject Matter Experts as Technical Instructors/Facilitators.

Research Questions

From the review of the related literature, three components were established. They were (1) the criteria for trainer effectiveness in the instructor/facilitator role; (2) a conceptual framework for analyzing effectiveness; and (3) a conceptualization of variables and relationships defining the effectiveness of SMEs as technical instructors/facilitators. Based on the problem, purpose, and the review of the related literature, the following questions guided this study:

1. What self-reported level of proficiency do technical trainers possess for the competencies that define the instructor/facilitator role?
2. Is there a significant relationship in the reported level of proficiency and the respondent's academic degrees in education, certification, or other professional preparation in training and development?
3. Is there a significant relationship in the perceived level of proficiency needed for the required competencies and the number of years of experience in the role of technical trainer?

Methodology

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To evaluate the effectiveness of the SME in the technical instructor/facilitator role, a survey instrument was designed which followed the design of the McLagan (1989) study. The survey instrument was developed utilizing the work outputs and competencies for the instructor/facilitator role as defined in *The Models* (McLagan, 1989). The instrument, *Technical Trainer Practices Survey*, was a four-page questionnaire consisting of three parts. Part one collected data relative to the outputs produced by SMEs in technical training. In this section, there were seven categories of questions, each representing one of the work outputs of the instructor/facilitator role as defined by *The Models* (McLagan, 1989).

Part two collected data on the perceived proficiency of the instructor/facilitators relative to the identified competencies. A rating scale was used to gather these responses, beginning with zero being equated with having no perceived proficiency in the competency. A response of one or two indicated a perceived basic proficiency level for the competency; three and four represented a perception of intermediate proficiency level for the competency; five and six were equated with having an advanced level of proficiency for the competency. The competencies assessed were the fourteen competencies (the definition of each competency was provided) associated with the instructor/facilitator role identified in *The Research Report* (McLagan & Suhadolnik, 1989).

Part three of the survey collected demographic information for the technical trainer. The responses were used to categorize the respondents in terms of job title, number of years as a technical trainer, educational background, type of adult education or training and development preparation received, and previous job position.

Population and Sample

The study population consisted of 4,732 trainers who were members of the international American Society for Training and Development (ASTD) organization and identified their Professional Practice Area (PPA) as Technical and Skills Training and their job title as Specialist/Coordinator/Trainer. Systematic random selection of 500 names was conducted electronically by ASTD. The survey was mailed with a business reply envelope on three separate occasions to increase the response rate. A total of 165 surveys were returned, which yielded a sample response rate of 33%.

Measurement of Variables

The dependent variable in this research was SMEs perceived effectiveness in the delivery of technical training as measured by the total score received from the responses to the level of proficiency related to each competency. The three independent variables used were (1) number of years as a technical trainer; (2) formal education background; and (3) adult education or training and development preparation.

Respondents were asked to indicate the number of years they have been a technical trainer. The information provided was categorized into five groups: 0 - 1 year, 2 - 4 years, 5 - 10 years, 11 - 24 years, and 25 or more years. Level and type of formal education was determined from responses relating to educational background. The respondents were asked to indicate the year he or she received advanced degrees and their major course of study. To determine the type of adult education or training and development preparation received, each respondent was asked to indicate any relevant workshops, classes, or seminars in these areas. Data analysis processes included calculation of descriptive statistics on the demographic data, calculation of the frequencies and mean scores for each competency, and test for significant relationships between the variables.

Findings

Research question one was analyzed from the respondents' responses to their perceived level of proficiency in part two of the *Technical Trainer Practices Survey*. Respondents were asked to assess their perceived level of expertise in each competency for the instructor/facilitator role. As previously described, expertise categories were none, basic, intermediate, and advanced. With the exception of Objectives Preparation Skill and Questioning Skill, all respondents assessed themselves at the basic level or above for each competency (Table 1).

The mean score for each competency (Table 2) falls into the intermediate level of expertise range. Ranking the competencies according to mean score shows that the respondents assessed their presentation skills expertise ($\underline{M}$ = 4.90) higher than any other of the competencies. Conversely, the respondents' expertise in group process skill ($\underline{M}$ = 4.05) was ranked lowest of the competencies.

The analysis of research question two categorized the responses to the perceived level of expertise into three (3) categories for scoring purposes. The rating scales for perceived proficiency were 0 (no perceived proficiency), 1

and 2 (basic proficiency level), 3 and 4 (intermediate proficiency level) and 5 and 6 (advanced proficiency level). The statistical analysis (Table 3) indicated that there were no significant relationship in the perceived competency levels for the technical instructors/facilitators based on degrees in education, certification, or other preparation in training and development. The results from the data analysis (Table 4) of research question three revealed significant relationships in the competence level based on the number of years in technical training delivery. Hence, the data indicated a relationship in the level of perceived proficiency of technical instructors/facilitators based on the number of years in the instructor/facilitator role.

Table 1

Frequency Distribution of Level of Expertise for Instructor/Facilitator Competencies

Competency	None		Basic		Intermediate		Advanced	
	n	%	n	%	n	%	n	%
Adult Learning Understanding	0	0	16	10.5	74	48.7	62	40.8
Coaching Skill	0	0	6	3.9	83	54.6	63	41.5
Feedback Skill	0	0	4	2.7	76	50.6	70	46.7
Group Process Skill	0	0	20	13.2	70	46.0	62	40.8
Intellectual Versatility	0	0	14	9.2	58	38.2	80	52.6
Objectives Preparation Skill	1	0.6	8	5.2	58	38.2	85	56.0
Observing Skill	0	0	6	4.0	66	43.7	79	52.3
Performance Observation Skill	0	0	17	11.2	75	49.3	60	39.5
Presentation Skill	0	0	1	0.7	42	27.6	109	71.7
Questioning Skill	2	1.3	9	5.9	71	46.7	70	46.1
Relationship Building Skill	0	0	11	7.2	69	45.4	72	47.4
Self Knowledge	0	0	9	5.9	51	33.6	92	60.5
Subject Matter Expertise	0	0	3	2.0	54	35.5	95	62.5
Training & Development Methods & Techniques Understanding	0	0	14	9.2	60	39.5	78	51.3

n=152

Table 2

Mean Score for Each Competency

Competency	Mean	Rank	Self-Reported Competency Level	Required Competency Level (McLagan, 1989)
Presentation Skill	4.895	1	Intermediate	Advanced
Subject Matter Expertise	4.664	2	Intermediate	Advanced
Self Knowledge	4.559	3	Intermediate	Advanced
Objectives Preparation Skill	4.513	4	Intermediate	Intermediate
Observing Skill	4.497	5	Intermediate	Advanced
Relationship Building Skill	4.368	6	Intermediate	Advanced
Feedback Skill	4.360	7	Intermediate	Advanced
Training & Development Methods & Techniques	4.336	8	Intermediate	Advanced
Intellectual Versatility	4.296	9	Intermediate	Advanced
Questioning Skill	4.270	10	Intermediate	Advanced
Coaching Skill	4.224	11	Intermediate	Advanced
Adult Learning Understanding	4.118	12	Intermediate	Advanced
Performance Observation Skill	4.066	13	Intermediate	Advanced
Group Process Skill	4.046	14	Intermediate	Advanced

Table 3

Relationship Between Academic Degree Type and Proficiency Level

	Technical Degree		Education Degree		Total	
	n	%	n	%	n	%
Intermediate	31	34.4	4	33.3	35	34.3
Advanced	59	65.6	8	66.7	67	65.7
Total	90	100.0	12	100.0	102	100.0

$\chi 2 = .006$; df = 1; $p > .05$

Table 4

Relationship Between Experience Level and Proficiency Level

	Less than 5 Years Experience		5 years or More Experience		Total	
	n	%	n	%	n	%
Basic	1	1.9			1	0.7
Intermediate	27	51.9	19	19.4	46	30.7
Advanced	24	46.2	79	80.6	103	68.6
Total	52	100.0	98	100.0	150	100.0

$\chi 2 = 19.49$; df = 2; $p = .00006$; $p < .05$

Contributions to New Knowledge and Future Research Directions In HRD

The purpose of this study was to determine if SMEs who deliver technical training perceive that they possess the required proficiency levels for effectiveness in the role of technical instructor/facilitator. There are five key findings from this study.

First, based on the mean score for each competency, the extent to which the work outputs are produced by SMEs does not advance further than the intermediate level on average. Second, technical trainers with five or more years experience in the area of technical training delivery report a higher level of proficiency in the competencies for the instructor/facilitator role. Based on these findings, practical application of the competencies may increase perceived expertise level. Third, technical trainers perceive themselves to have the highest level of proficiency in presentation skills and subject matter expertise. Additionally, technical trainers perceive their level of proficiency in training and development methods and techniques and adult learning methods to be at an intermediate level of proficiency. Fourth, although the literature in training and development states the importance of instructor preparation through formal education in adult education or training and development, these factors have no perceived impact on the level of proficiency in relation to instructor/facilitator competencies. Finally, preparation in adult education or training and development has no perceived impact on the level of expertise in relation to instructor/facilitator competencies.

The findings of this study has contributed to new knowledge in HRD, specifically technical training in numerous ways. First, the findings demonstrate a relationship between the competency level rating and the amount of experience in technical training delivery. For instance, technical trainers with five or more years experience in the area of technical training delivery report a higher level of proficiency in the competencies for the instructor/facilitator role than those with lesser years of experience. These findings agree with the Falkman (1990) study that found that novice trainers have a difficult time in relating to adults as learners. Accordingly, practical application of the competencies appears to increase the perceived proficiency level.

Second, the training and development literature and the findings of this study agree that presentation skills are a critical competency for the subject matter expert acting in the role of instructor/facilitator in the delivery of technical training. However, effective presentation skills alone do not constitute effective technical training delivery. Effective technical training delivery is dependent upon the SME possessing an advanced level of expertise in the competencies for the instructor/facilitator role. Hence, an advanced level proficiency for all competencies can be regarded as an enhancement to the technical training efforts.

Third, this study provides evidence to support the position that SMEs in the role of instructor/facilitator who possess an advanced level of expertise in the competencies may also provide a higher level of technical training. This conclusion has direct implications for the workplace since efficient workplace practice and expertise is paramount in today's dynamic technological environment making effective training crucial to the continued success of an organization. Although the standard practice of recruiting resident technical experts and developing them as technical trainers should be addressed by organizations if they are to remain viable in today's marketplace, the more significant issue is one of degree. That is, if the technical trainer does not possess an advanced proficiency level defined by the McLagan (1989) research results, not only will the training suffer, but also, the organization will not be as competitive in the marketplace.

These issues demonstrate that the area of instructor recruitment is also vital in maintaining an organization's position in the marketplace. Since this study found that the number of years of experience is related to performance effectiveness, it stands to reason that employing SMEs with a minimum of five years of training and an advanced level of proficiency in the competencies would benefit an organization and improve technical training overall.

Future Research

This study was designed as an introductory exploration of technical SMEs leading to further research in instructor effectiveness. The findings of this study indicate issues that should be directed to future research. First, further exploration into measuring effectiveness of SMEs as technical trainers should be investigated. An examination of effectiveness by gathering actual performance data would further confirm the effectiveness of SMEs as technical trainers. Manager assessment, student perceptions, student achievement, or classroom audits are several options to obtain this effectiveness data. In addition, other contributors to effectiveness could also be examined.

An examination of the effectiveness of SMEs with no education or training degrees or preparation, before and after they have completed a training and development certificate program should be undertaken. The findings of this type of study could yield implications for the establishment of required certification programs for technical trainers in conjunction with other required technical and technology-based certifications.

Another area that requires further exploration in instructor/facilitator competencies are the values that an advanced level of proficiency adds to the learner and to the organization. Future research should examine the impact on the transfer of training based on the proficiency level. For example, the Falkman (1990) study determined that more experienced trainers were better able to deal with adults as learners than those with less experience. Although this current study found a relationship between experience and level of proficiency, the impact of proficiency on training transfer is an important topic for future study.

A final issue worthy of further research is the determination of whether or not the McLagan (1989) competencies are also applicable for technology-based training delivery. If the delivery methods are moving from instructor-led to technology based then what will be the competencies required of those practitioners in the instructor/facilitator role?

In sum, this research determined the variables which affect the effectiveness of the technical SME in the delivery of technical training. Effective technical SMEs can be identified in organizations as those who possess an intermediate level of proficiency in presentation skills and possess five or more years of experience in the delivery of technical training. Hence, the findings of this study indicate that in order to improve technical training, business and industry must consider factors other than technical subject matter expertise when recruiting technical trainers.

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